Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An apparatus for calibrating a reception signal of an array antenna in a mobile communication system, comprising:

a reference signal generator which outputs a plurality of reference signals having same phases, by calibrating a phase of a locally generated signal; and

an antenna array which receives a radio signal through a plurality of antenna paths by a plurality of reference signals, and calibrating distortion of each array antenna path,

wherein the reference signal generating unit comprises:

a splitter which divides an RF signal into as many signals as a number of antennas in the array;

a phase detector which detects phase information of the divided signals; and

a phase shifter which uniformly controls phases of the divided signals based on the phase information.

2. (Currently Amended) The apparatus of claim 1, wherein the reference signal generating unit further comprises:

a local reference signal generator which locally generates a reference signal; and

an RF converter which converts the reference signal into [[an]] the RF signal[[;]]

~~a splitter which divides the RF signal into as many signals as a number of antennas in the array;~~

~~a phase detector which detects phase information of the divided signals; and~~

~~a phase shifter which uniformly controls phases of the divided signals based on the phase information~~.

3. (Original) The apparatus of claim 1, wherein the reference signal generator further comprises a complex conjugate number calculator.

4. (Original) The apparatus of claim 3, wherein the complex conjugate number calculator calculates complex conjugate numbers of the divided RF signals.

5. (Original) The apparatus of claim 1, wherein the antenna array comprises:

a plurality of antennas for receiving a radio signal;

a front-end part for receiving a reference signal outputted from a reference signal generator and a radio signal received by the antennas;

an RF transmitter for converting a baseband signal into an RF signal and transmitting the RF signal to the front-end part;

an RF receiver for converting the RF signal into a baseband signal; and

a baseband processor calibrating the baseband signal.

6. (Original) The apparatus of claim 5, wherein the baseband processor sets a radio signal received through one antenna path as a reference, and multiplies a radio signal received through the other antenna path by a calibration vector of the radio signal set as a reference, thereby performing calibration.

7. (Original)The apparatus of claim 1, wherein the antenna array comprises a smart antenna system.

8. (Currently Amended) A method for calibrating a reception signal of an array antenna system in a mobile communication system, comprising:

outputting a plurality of reference signals having same phases by calibrating a phase of a locally generated signal;

receiving radio signals through a plurality of antenna paths using the plurality of reference signals, and converting the radio signals into baseband signals; and

calibrating the baseband signals,

wherein outputting the plurality of reference signals comprises:

dividing an RF signal into a number of signals;

detecting phase information of the divided signals; and

outputting a plurality of reference signals having the same phases by performing phase shifting after the phase information is detected.

9. (Currently Amended) The method of claim 8, wherein outputting the plurality of reference signals further comprises:

locally generating a reference signal; and

converting the reference signal into an RF signal[[;]]

~~dividing the RF signal into a number of signals;~~

~~detecting phase information of the divided signals; and~~

~~outputting a plurality of reference signals having same phases by performing phase shifting after the phase information is detected~~.

10. (Currently Amended) The method of claim 98, wherein outputting a plurality of reference signals comprises calculating complex conjugate numbers.

11. (Currently Amended) The method of claim 98, wherein dividing the RF signal includes dividing the RF signal into as many signals as a number of antennas.

12. (Currently Amended) The method of claim 98, wherein the phase shifting is performed by uniformly calibrating phases of signals using one of phase information and complex conjugate numbers.

13. (Original) The method of claim 12, wherein calibrating phases using the complex conjugate numbers includes multiplying each divided RF signal by a complex conjugate number of said each signal.

14. (Original) The method of claim 8, wherein calibrating the baseband signal comprises:

setting a radio signal received through one antenna path as a reference; and

multiplying a radio signal inputted through the other antenna path by a calibration vector of the radio signal set as a reference.

15. (New) A calibration apparatus, comprising:

a splitter configured to split an RF converted local ref signal into a plurality of signals;

a phase detector configured to detect phases of the plurality of signals; and

a phase shifter configured to shift a phase of the plurality of signals to be the same based on the detected phases, and to output the plurality of signals having the same phases to an antenna array.

16. (New) The apparatus of claim 15, further comprising:

a local reference signal generator which locally generates a reference signal;

an RF converter which converts the reference signal into the RF signal; and

a complex conjugate number calculator disposed between the phase detector and the phase shifter.

17. (New) The apparatus of claim 16, wherein the complex conjugate number calculator calculates complex conjugate numbers of the divided RF signals.

18. (New) The apparatus of claim 16, wherein the antenna array comprises:

a plurality of antennas for receiving a radio signal;

a front-end part for receiving a reference signal outputted from a reference signal generator and a radio signal received by the antennas;

an RF transmitter for converting a baseband signal into an RF signal and transmitting the RF signal to the front-end part;

an RF receiver for converting the RF signal into a baseband signal; and

a baseband processor calibrating the baseband signal.

19. (New) The apparatus of claim 18, wherein the baseband processor sets a radio signal received through one antenna path as a reference, and multiplies a radio signal received through the other antenna path by a calibration vector of the radio signal set as a reference, thereby performing calibration.

20. (New) The apparatus of claim 15, wherein the antenna array comprises a smart antenna system.